

University of Alberta

**Perfectionism, Perceptions of Failure, and Depression in Asian and Caucasian First-Year
University Students**

by

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of the requirements for the degree of Master of Education**

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Abstract

This study explored whether perceptions of failure mediated the perfectionism-depression relationship in a sample of 114 first-year university students after their midterm examinations. Asian and Caucasian students were compared on this path model and on a number of facets of perfectionism. In September (Time 1), participants completed questionnaires measuring perfectionism, depression, and grade expectations. After they received their midterm test results (Time 2), they completed questionnaires measuring depression, anxiety, actual grades and perceptions of failure. The path model was not supported. Perfectionism was not associated with perceptions of failure. In Asian students, perfectionism was not related to Time 2 depression. Two distinct paths to Time 2 depression were found: (1) Time 1 depression mediated the perfectionism-depression (Time 2) relationship but only in Caucasian students, and (2) perception of failure predicted depression (Time 2). In Asian students, perfectionism was more adaptive and more associated with parental demands than in Caucasian students.

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Introduction

Students often find the college years stressful and challenging, presenting numerous deadlines, countless evaluations, and intense workloads. As a result, depression is common among college students. One study found that one third of students at a university reported the need for assistance with depression and anxiety (Bishop, Bauer, & Becker, 1998). The present study tested a path model of depression, specifically, whether perceptions of failure mediated the relationship between perfectionism and depression. It also examined whether the path model varied in Caucasian and Asian university students and whether perfectionism manifested itself differently in these two ethnic groups.

Research into the variables associated with depression is essential as this psychological disorder places an enormous burden on both individuals and society. People with depression live with enormous amounts of pain and the social effects of this ripple through entire families and even into the workplace. The following are some of the numerous and complex symptoms of depression (American Psychiatric Association, 2000). People who are depressed experience affect changes such as depressed mood, feelings of emptiness, and an inability to experience pleasure. Some individuals feel sad for no reason, whereas others feel irritable and cannot control their tempers. Depression, however, is much more than an anguished mood as there are also cognitive, behavioural, and physical changes associated with it. Some people have difficulties concentrating and experience short-term memory problems. Changes in appetite and weight are common symptoms of depression, as well as problems with sleep, such as hypersomnia and insomnia. Depression may create feelings of hopelessness and discouragement in individuals to the point that they may have recurrent thoughts of death and suicide.

The financial costs associated with this psychological condition are considerable. These costs are both direct and indirect. The direct costs are associated primarily with diagnosis and treatment, while the indirect costs involve loss of productivity in the work place due to absenteeism and diminished on-the-job effectiveness. According to a recent study, it is estimated that the cost of depression to the Canadian economy is 14.4 million dollars per year (Stephen, & Jorbert, 2001).

Researchers have constructed theories and searched for the factors that predispose people to depression. Some have contended that depression is caused by chemical imbalances within the brain (Schildkraut, 1965), whereas, others have hypothesized that depression is related to distorted thinking (Beck, 1983), while yet others believe social factors contribute to the development of depression (Coyne, 1976). Research is now beginning to support and identify perfectionism as one factor involved in the etiology of depression (Blatt, 1995, Preusser, Rice, & Ashby 1994). Perfectionism is a serious and debilitating cognitive style. A central feature of perfectionism is the setting of extremely high standards, with recurrent dissatisfaction and self-criticism about one's performance. It has been repeatedly shown that perfectionism is correlated with depression (Hayward & Arthur, 1998; Schweiter & Hamilton, 1998; Sumi & Kanda, 2002). This relationship has been found to exist among college students (Hayward & Arthur, 1998) and psychiatric populations (Hewitt, Ediger, & Flett, 1996).

Some researchers have found that perfectionism is indirectly associated with depression. For example, it has been demonstrated that self-esteem and coping skills mediate the perfectionism-depression relationship (Preusser et al., 1994; Flett, Hewitt, Blankstein, & O'Brien, 1991 respectively). Other researchers have discovered that there are variables that moderate the perfectionism-depression relationship, such as a negative

attributional style (Chang & Sanna, 2001) and stress (Hewitt & Flett, 1993). Further research is required to explore what other variables are involved in the perfectionism-depression relationship. One such variable may be one's perception of failure. To date, no studies have yet examined if the perception of failure mediates the relationship between perfectionism and depression. It is likely that perfectionists would perceive themselves as failing more than non-perfectionists because they are characterized as setting extremely high standards, which are difficult to achieve, and as viewing each less than perfect performance as a failure. Perceiving oneself as continually experiencing failures would understandably result in depression.

Although it has not yet been directly tested, research does suggest that perception of failure mediates the perfectionism-depression relationship. For example, college students' negative emotional responses in evaluation or feedback situations imply that perfectionism results in a higher number of perceptions of failure, which leads to depression. It has been discovered that perfectionists are emotionally reactive to stressors that imply possible failure (Dunkley, Zuroff, & Blankstein, 2003). Even when perfectionists perform well, they are inclined to be dissatisfied with their performance and feel as though they should have done better (Grzegorek, 2003). Furthermore, perfectionists tend to experience negative affect following an exam whether they have achieved their goals or not (Beiling, Israeli, Smith, Antony, & Martin, 2003).

Other studies have found that failure is an antecedent of depression when certain cognitive conditions exist, such as low self-esteem (Abela, 2002), negative attributional style (Metalsky, Joiner, Hardin, & Abramson, 1993), and self-criticism (Zuroff & Mongrain, 1987). These cognitive conditions are present in perfectionists (Preusser, et al.,

1994; Whittaker, 2003; Grzegorek, Slaney, Franze, & Rice, 2004 respectively), which also suggests that perception of failure mediates the perfectionism-depression relationship.

There remain numerous areas which require further research in regards to perfectionism. As interest in this topic has escalated, some researchers have begun to focus their attention on whether there are ethnic differences in perfectionism. Research is extremely limited in this area. Two studies have found Asian perfectionists to score higher on some perfectionism scales (Castro & Rice, 2003; Chang, 1998). If there are ethnic differences in perfectionism, there may also be ethnic differences in the perfectionism-depression relationship. Once again, the research in this area is very minimal.

In summary, there is a need for further research into the variables involved in the relationship between perfectionism and depression. Additional research is also necessary to examine if there are ethnic differences in perfectionism as well as if there are ethnic differences in the relationships between perfectionism and other variables. This study had three purposes. One purpose was to test a path model linking perfectionism to depression. The study examined whether perception of failure mediated the relationship between perfectionism and depression. A further purpose was to examine if this path model varied with ethnicity. The third purpose of the study was to examine if there were differences between Caucasian and Asian students in perfectionism traits.

One hundred and fourteen university students completed a variety of questionnaires on two separate occasions. The first occasion being at the beginning of a school semester (Time 1) and the second, after they received their midterm examination grades (Time 2). Additional variables, such as anxiety, grade expectations, and examination results, were not central to the present study but were measured for

information purposes. On the first occasion, the students completed tests that measured perfectionism and depression, and were asked to report their grade expectations. On the second occasion, the students completed tests measuring depression, anxiety, and perceptions of failure. They were also asked to report their actual grades.

The significance of this study was that it provided evidence as to whether perception of failure mediated the relationship between perfectionism and depression. This enhancement of the understanding of depression was especially important since the rates of depression are high among college students. Also, this study provided greater understanding of perfectionism and contributed to the existing body of knowledge in this area. Furthermore, this research provided greater clarity and understanding of how ethnicity influenced perfectionism, perceived failure, and depression, and the relationships among these variables. In our multicultural society, this is particularly relevant and important. With this knowledge, professionals have greater insight as to whether the treatment and prevention of perfectionism and depression should differ between Caucasian and Asian students.

Literature Review

Introduction

The principal goal of this study was to examine the relationships between perfectionism, perception of failure, depression, and ethnicity. The literature review is organized into two main sections, depression and perfectionism. In the depression section, the paper discusses the definition of depression, rates of depression, theories of depression, and constructs correlated with depression. In the perfectionism portion, the paper reviews definitions of perfectionism, and cites previous research regarding the relationships of perfectionism to perceived failure, depression, and ethnicity. The review concludes with a summary of the research as well as a discussion of the purpose, rationale, and hypotheses of this present study.

Depression

Defining depression

Everyone becomes sad at one time or another; it is a normal part of life. We each encounter set backs, disappointments, and losses throughout our lives which result in feelings of sorrow and grief. However, these sorrowful emotions usually pass within a few days. When people speak of depression they are usually referring to a disturbance in mood which is more than feeling "blue" or "down". When sadness deepens, intensifies, and interferes with life for an extended period of time it is considered depression. This psychological condition changes how people feel and think, as well as changing their behaviour and their sense of physical well-being. They cannot simply "pull themselves together" and not be depressed anymore. People often experience a variety of symptoms, which vary from person to person and depend on the severity of the depression.

Symptoms of depression can be divided into four categories: affective, cognitive, behavioural, and physical. The following is a discussion of these symptoms of depression as described by Klerman in a psychiatry handbook (1988).

Affective Symptoms. People who are depressed often describe their mood as extremely sad, hopeless, and irritable. Some report feeling "blah", having no feelings, or feeling anxious (American Psychiatric Association, 2000). Some people feel sad without cause, whereas, others report being constantly irritable for no apparent reason, and have difficulty controlling their temper. Other symptoms of depression are feelings of worthlessness, self-reproach, guilt, shame, helplessness, and pessimism. The world is overwhelming for individuals who are depressed. When people feel overwhelmed, they feel unable to change things and become hopeless and helpless, which further increases their extreme feelings of pessimism and gloom. Consequently, some individuals with depression think about suicide as a way to relieve their misery.

Cognitive symptoms. Depression can retard speech and thought. Often individuals with depression speak very slowly. Their thought processes slow down as they have difficulty concentrating and experience lapses in memory, especially in short-term memory. Some people report difficulty making decisions. Negative thoughts about self, the world, and the future are common (Beck, 1983).

Behavioural symptoms. Changes in behaviour that occur when people are depressed are reflective of their negative emotions. For example, some people act in an apathetic manner because that is how they feel, while others withdraw because they do not feel comfortable being around people anymore. Because of the chronic despair, excessive crying is common. Some depressed individuals will complain about everything and/or have outbursts of anger.

Many depressed people lose interest and derive little pleasure from activities that were previously enjoyable. They may try going out, seeing friends, engaging in sports but none of these contribute to feelings of happiness. Some also state that even routine activities are very difficult for them and seem daunting, to the detriment of work and household responsibilities. Depressed people may neglect their personal appearance and hygiene.

Frequently there is a change in appetite when people become depressed. Some people will eat very little and will consequently, lose weight. The very thought of food makes them ill. Buying food, preparing it, and eating it, takes energy that they do not have. On the other hand, some people experience an increase in appetite when they are depressed and gain weight. Often they increase their eating during the evening hours. Food becomes a source of comfort that is readily available.

Some individuals experience psychomotor retardation, in which they display little movement or move at a slow pace. Other people, however, experience psychomotor agitation, where they may be extremely restless, constantly moving about, pacing the floor, wringing their hands, or exhibiting jerky movements.

Physical symptoms. One characteristic of depression is a feeling of fatigue. People with depression often complain of a lack of energy, weakness, and exhaustion without physical exertion. They are less efficient at completing tasks. For example, an individual may complain that washing in the morning is exhausting and takes twice as long as before. In addition to fatigue, some people report physical ailments such as headaches, neck aches, back pain, muscle cramps, nausea, vomiting, constipation, heartburn, indigestion, flatulence, blurred vision, and pain on urination. Extensive tests and treatments to attempt to alleviate their pain results in an overuse of care facilities.

Sleep problems are also a common complaint of people with depression. It has previously been estimated that 70-80% of people with depression suffer from some form of insomnia (Klerman, 1988). The most frequent type of insomnia is early morning insomnia. These individuals usually do not have trouble falling asleep but they wake up after several hours and are unable to fall back to sleep. Some people experience hypersomnia where they have difficulty staying awake and end up sleeping an exceptional amount.

Diagnostic Criteria

Certain specific criteria must be met in order to achieve a diagnosis of clinical depression. This criteria is outlined in the Diagnostic and Statistical Manual of Mental Disorder fourth edition revised (DSM-IV-TR; American Psychiatric Association, 2000). According to the DSM-IV-TR, in order to meet the criteria for depression one must have five or more of the following symptoms occurring over the same two-week period and they need to represent a marked change from previous functioning: (1) a depressed mood most of the day, nearly every day; (2) markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day; (3) significant weight loss or weight gain when not dieting or trying to gain weight, or a decrease or increase in appetite nearly every day; (4) insomnia or hypersomnia nearly every day; (5) psychomotor agitation or retardation nearly every day (observable by others); (6) fatigue or loss of energy nearly every day; (7) feelings of worthlessness or excessive or inappropriate guilt nearly every day; (8) diminished ability to think or concentrate, or indecisiveness, nearly every day; (9) recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing

suicide. In addition, at least one of these symptoms must be either a depressed mood or a loss of interest or pleasure. The symptoms must be causing significant impairment in important areas of social or occupational functioning. One would not be diagnosed with depression if the symptoms were due to physiological effects of a substance, due to a general medical condition or due to bereavement. According to the DSM-IV-TR (American Psychiatric Association, 2000), symptoms of a depressive episode usually develop over days to weeks. The symptoms explicitly indicate that depression is a dreadful condition to experience. It is important to consider how prevalent this condition is and what the recurrence rates are.

Rates of depression

According to Statistics Canada (2001), 7.1% of the Canadian population aged 12 or older had experienced at least one major depressive episode within the last 12 months. The prevalence of depression was found to be higher in females than males, 9.2% and 5.0 % respectively. Across age groups, depression was highest among those aged 20 to 24 (9.6%) and the lowest among seniors aged 65 or older (3.2%). It was also found that Alberta had the highest rate (9.2%) and Newfoundland had the lowest (4.7%).

The duration of depression varies, with a typical untreated episode lasting four months or longer, regardless of the age at onset (American Psychiatric Association, 2000). Unfortunately, depression has a high recurrence rate. Approximately 60% of people who experienced depression at one point in their lives, are expected to have a recurrent depressive episode (American Psychiatric Association, 2000). Individuals who have had two depressive episodes, have a 70% chance of having a third one, and individuals who have had three depressive episodes, have a 90% chance of having a fourth episode.

Research shows that depression is a serious problem among university students. Bishop et al. (1998) conducted an extensive survey of student needs at a large urban university. They found that more than one third of the students reported a need for assistance with depression and anxiety. Miller and Rice (1993) found that 53% of students attending a university counselling center admitted that depression was troubling them.

Theories about the antecedents of depression

For more than 2500 years, physicians have recognized the condition known as depression. Whether one consults Aristotle, Galen, Burton, or 19th century physicians, case descriptions from the past often bear remarkable resemblances to patients encountered in modern-day clinical practice (Gerrit, 2003). As would be expected, theories of depression have existed for just as long. Research into depression continues to grow exponentially as contemporary explanatory models have been developed. This extensive research has produced evidence supporting many models of depression. These differing theories of depression can be roughly divided into three categories – biological, psychological, and social.

Biological theories. The brain can be viewed as a giant messaging system that controls everything within the body, including one's emotions (Pinel, 2000). It is made up of billions of cells called neurons, which send and receive messages from the rest of the body, using brain chemicals called neurotransmitters (Pinel, 2000). According to the monoamine theory (Schildkraut, 1965), which is the dominant biological theory of depression, these brain chemicals are responsible for emotional states. This theory posits

that when there is an insufficient amount of the neurotransmitters norepinephrine (NE) and serotonin released at the synapses of the cells, depression occurs.

Other biological theories of depression, such as the hypothalamus-pituitary-adrenal theory (Andreasen, 1984), focus on abnormalities of the hormonal response to stress. According to this theory, when the processes that normally control the release of cortisol in the hypothalamus-pituitary-adrenal system are not working properly, an individual may have too much cortisol and adrenocorticotrophic hormones being released and will become depressed. Another popular theory of depression is a version of the diathesis-stress model (Nemeroff, 1998). The central idea of this model is that individuals inherit a tendency to develop depression, which does not develop unless they are exposed to stress early in life. This exposure to stress permanently sensitizes their systems which will then over-react to mild-stressors for the duration of their lives.

Intrapersonal theories. Presently, there are two main intrapersonal theories of depression, cognitive theory and behavioural theory. The most prominent and prolific writer on the cognitive theory of depression is Aaron Beck. According to Beck's cognitive theory (Beck, 1983), people's emotions are influenced by the way in which they interpret and think about a situation. Core beliefs, intermediate beliefs, and automatic thoughts influence how people interpret an event. Beginning in childhood, people develop certain beliefs about themselves, other people, and the world, which are regarded as truth. These beliefs are called core beliefs and are the most fundamental level of belief. An example of a core belief is "I am incompetent". One's core beliefs influence the development of an intermediate class of beliefs which consists of attitudes, rules, and assumptions, which are often unarticulated. An example of an attitude formed from a core belief is "it's terrible to be incompetent". A corresponding rule and assumption would be

"I must work as hard as I can all the time" and "If I work as hard as I can, I may be able to do some things that other people can do easily". Proceeding one step further, these intermediate beliefs influence a person's automatic thoughts, the actual words or images go through a person's mind in a specific situation. An automatic thought in this situation may be "I'm useless". Therefore, when an event occurs, people interpret the situation based on their automatic thoughts, intermediate beliefs, and core beliefs. These beliefs and thoughts ultimately determine how they will feel about an event. People with depression have maladaptive beliefs that are latent but become activated by stressful events. These maladaptive beliefs then generate negative automatic thoughts that take the form of overly pessimistic views of oneself, one's world, and one's future, which in turn lead to depression. For example, suppose an individual is reading a book (situation), they may think to themselves, "This is too hard. I'll never understand this." (automatic thoughts). These thoughts may be based on the intermediate belief that if someone does not understand something perfectly, they are dumb, and on the core belief that they are incompetent. Following their automatic thoughts, they would likely feel depressed. Beck also maintains that people with depression make consistent errors in their thinking. These errors can be identified in their automatic thoughts. An example of a cognitive error is overgeneralizing, thinking that if something is true in one situation, it will be true in all situations. Some individuals have dichotomous thinking in which everything is either one extreme or the other (e.g. good or bad).

Lewinsohn (1974) developed a popular behavioural model of depression. This model is based on the view that depression is a person-behaviour-environment transaction. This means that the environment, the person, and the behaviour all interact and influence each other. For example, depressive feelings and behaviours are precipitated by changes

in the environment. Once activated, depressive behaviours elicit negative reactions and consequences in the environment, resulting in a vicious cycle. Lewinsohn also maintains that a low rate of response-contingent positive reinforcement and/or a high rate of aversive experience precipitates depression. Therefore, when a person's behaviour results in few positive outcomes or a high rate of negative outcomes, depressive mood, cognition, and behaviour all occur. There are many explanations as to why changes in reinforcement patterns occur. There may be few reinforcers in a person's environment due to a loss or impoverishment. Another possibility is that the person may have a skill deficit that prevents rewarding interactions with others. A shy person or someone with poor communication skills would fall into this category. Finally, a previous reinforcer may not be reinforcing to the individual anymore. In this situation, it is the person's perception of the experience that has changed.

Interpersonal or social theories. Adherents of this model maintain that depression needs to be understood in its interpersonal context as it is fundamentally interpersonal in nature. According to this perspective, the interpersonal context greatly affects whether a person becomes depressed, the person's subjective experience while depressed, and the behavioural manifestations and resolution of the disorder. This perspective also explores the mutually causative, reciprocal processes occurring between depressed persons and others. Many context factors are hypothesized to lead to depression. Brown and Harris (1978), for example, believe that severe life events, such as loss and disappointments in close relationships, play a key role in the development of depression especially when the individual has limited resources for dealing with such life events. Lack of an intimate, confiding relationship is the most potent interpersonal factor that creates a vulnerability to such life stress. Others theorize that severe conflicts in relationships will lead to

depression (Weissman & Paykel, 1974). Coyne (1976) is an important contributor to the interpersonal approach. He is primarily interested in depressed individuals exchanges in the environment. He theorizes that a depressed person elicits negative reaction from others which in fact worsens the depression. He believes that depressed individuals seek reassurance from others, to alleviate their doubts concerning their own worth or whether others truly care about them. Often others provide reassurance but the depressed person doubts its genuineness, attributing it instead to others' sense of pity or obligation and again seek reassurance. However, the reassurance is once again doubted, and the pattern repeats and continues, resistant to change. This leads to significant others becoming frustrated and irritated, and they start to reject and avoid the depressed person. The rejection from significant others shrinks the depressed person's interpersonal environment, which in turn, maintains or exacerbates the depressed person's symptoms and predicament.

Vulnerability theories of depression.

In addition to theories about the antecedents of depression, there are also theories about personality characteristics that make individuals vulnerable to depression. There are two main vulnerability theories of depression, Beck's cognitive theory (Beck, 1983), and Blatt's vulnerability theory (1974). Beck (1983) has proposed that the personality predispositions of sociotropy and autonomy serve as vulnerability factors to depression. Sociotropic individuals are focused on interpersonal issues and the need of others' approval to maintain a sense of well-being. Depression occurs in such individuals when they perceive interpersonal loss, social rejection, or disapproval from significant others. When they are depressed, their affect states are characterized by feelings of loss,

loneliness, and deprivation. Autonomous individuals, on the other hand, are focused on achievement and independence issues. They need to feel successful and free from constraint in order to maintain a sense of well-being. Depression occurs when they perceive achievement failure and/or lack of control over their environment. Their affective states when they are depressed are characterized by feelings of defeat, failure, and hopelessness.

According to Blatt (1974), two personality types create a vulnerability to depression, a dependent type (identical to Beck's sociotropy personality) and a self-critical type. Blatt has theorized that depression is triggered in dependent and self-critical individuals when they encounter negative events congruent with their personality types. This is known as the specific vulnerability hypothesis. Individuals who are high in dependency are hypothesized to be focused on interpersonal issues. They have a need for others' approval to maintain a sense of well-being, and therefore, depression occurs when they perceive disruptions in their relationships with others, experience any interpersonal loss, or suffer social rejection. Their affective states when they are depressed are characterized by feelings of loneliness, helplessness, weakness, and emptiness. Individuals who are high in self-criticism are focused on achievement issues. They feel a need to meet their own and others' standards to maintain a sense of well-being and may develop depression when they do not meet such standards. When such individuals are depressed, they feel worthless, guilt, inferiority, and self-disappointment.

Constructs Correlated with Depression

There is vast amount of research into the relationship between various constructs and depression. Relevant to the present study is research linking perfectionism and

perception of failure with depression. There are many similarities between the Blatt's self-criticism construct and perfectionism; therefore, it is important to discuss the correlation of self-criticism with depression. The following section will include a review of the research regarding self-criticism and failure and their association with depression. The relationship between perfectionism and depression will be discussed later in the literature review.

Self-criticism and depression. Self-criticism has consistently been shown to correlate with depression. It has been demonstrated in children (Fichman, Koestner, & Zuroff, 1996), adolescents (Blatt, Schaffer, Bers, & Quilan, 1992; Fichman, Koestner, & Zuroff, 1994; Luthar & Blatt, 1993), and college students (Smith, O'Keeffe, & Jenkins, 1988). In regards to the specific vulnerability hypothesis of self-criticism, some studies have found support for the hypothesis (Abela, Taxel, & Sakellaropoulou's study as cited in Abela & Taylor, 2003; Hammen & Goodman-Brown, 1990); whereas other studies have found that self-critical individuals become depressed when either achievement failure events or negative interpersonal events occur (Hammen, Marks, Mayo, & de Mayo, 1985; Zuroff & Mongrain, 1987). This suggests that self-critical individuals may be interpreting negative interpersonal events as achievement events. For example, getting a divorce is traditionally viewed as a negative interpersonal event but a self-critical individual may view it as related to achievement, such as the divorce hurting his or her chances of promotion in his or her company.

Failure and depression. Many studies have found that after individuals experienced failure they became depressed when certain cognitive conditions existed. Attributional style was one such condition. Mittelstaedt and Wollert (1991) found that self-blaming tendencies following task failure produced depression, especially when the

task was perceived as being important. It has also been demonstrated that attributional style, low self-esteem, and failure interacted to predict depressive reactions four days following feedback, through the mediating role of hopelessness (Metalsky et al., 1993). Similarly, Abela (2002) found that depressogenic inferential styles about the consequences, the causes, and the self for achievement events, interacted with low self-esteem to predict depressed mood in participants who experienced a personal failure. Houston (1995), found that attributional style predicted depression in those with low self-efficacy who failed. In contrast, Follette and Jacobson (1987) found attributions for a particular poor performance, rather than attributional style, predicted depressed mood. Interestingly, in graduate students, imposter fears correlated with depression when students failed as they tended to attribute failure internally and to overgeneralize a single failure to their overall self-concepts (Thompson, Davis, & Davidson, 1998). Finally, achievement and interpersonal failures have been shown to correlate with depression in self-critical individuals (Hammen, Marks, Mayol, & de Mayo, 1985; Zuroff & Mongrain, 1987).

The relationship between failure and depression has been shown to exist when a failure occurred in participants' lives (Abela, 2002; Metalsky et al., 1993), when it was experimentally induced (Houston, 1995; Mittelstaedt & Wollert, 1991), and when participants imagined themselves failing (Thompson et al., 1998).

Perfectionism

Defining Perfectionism

Perfectionism is a personality trait that is believed to increase one's vulnerability to depression. It is commonly known as the tendency to strive for flawlessness.

Perfectionists set excessive, even unreachable standards for their performance and

employ overly critical self-evaluations. Recently, perfectionism has changed from being conceptualized as a uni-dimensional personality trait, with a belief system based entirely on high personal standards, to a view that it is a multi-dimensional construct, with both personal and social aspects. However, there are many different views on the definition of perfectionism. Presently, there are two primary models of perfectionism in the literature.

Frost, Marten, Lahart, and Rosenblate (1990) conceptualize perfectionism as consisting of six dimensions, Concern over Mistakes, Personal Standards, Parental Expectations, Parental Criticism, Doubts about Actions, and Organization. Concern Over Mistakes measures is conceptualized as negative reactions to mistakes, a tendency to interpret mistakes as equivalent to failure, and a tendency to believe that one will lose the respect of others following failure (e.g. "If I fail partly, it is as bad as being a complete failure"). Personal Standards evaluates the extent to which individuals set high standards and the excessive importance placed on these high standards for self-evaluation (e.g. "I have extremely high goals"). Parental Criticism measures the tendency to perceive ones' parents as being overly critical (e.g. "My parents never tried to understand my mistakes"). Parental Expectations assesses the perception that parents have high expectations (e.g. "Only outstanding performance is good enough in my family"). Doubts about Action captures a vague sense of doubt about the quality of one's performance. It is the sense that a performance was somehow unsatisfactory (e.g. "Even when I do something very carefully, I often feel that it is not quite right"). Finally, Organization measures ones importance of and preference for order (e.g. "Neatness is very important to me").

In contrast, Hewitt and Flett (1991), view perfectionism as consisting of three dimensions, self-oriented, socially prescribed, and other-oriented perfectionism. Self-oriented perfectionism is similar to the traditional view of perfectionism. It is defined as

setting unrealistic, self-imposed standards for oneself, and as being highly self-critical to the point where one is unable to accept flaws, faults, or failure within oneself across multiple domains. In short, it is an active striving to be flawless. Socially prescribed perfectionism is having the belief that others maintain unrealistic expectations for oneself that are difficult, if not impossible, to meet, and one must meet these standards in order to win approval and acceptance. Other-oriented perfectionism is defined as having unrealistic expectations of others. These individuals are prone to be extremely critical of others, dominating, and unyielding.

Some researchers have suggested that there are some positive aspects of perfectionism, and that this trait can be classified as either adaptive or maladaptive (Enns et al., 2001). Basically, adaptive perfectionists set high, but achievable standards, and their sense of worth is not dependent on their performance (Flett & Hewitt, 2002). Maladaptive perfectionists, on the other hand, set unrealistically high standards, fear failure, and base their self-esteem on their performance. The present study focused on the maladaptive aspects.

Perfectionism and Failure

Perfectionists are known to be afraid of failure (Frost, et al, 1990). However, their cognitive style appears to make them vulnerable to perceiving themselves as failing. Perfectionists set extremely high standards for themselves, which may even be unattainable (Frost, et al, 1990). They then critically evaluate their performance, such that they categorize their performance in dichotomous terms of success and failure (Derr, 2002; Frost, et al, 1990). Therefore, if they do not perfectly reach their goals, they will view their performance as a failure (Frost et al, 1990). This cognitive style would make

perfectionistic university students especially vulnerable to perceptions of failure as their knowledge and skills are continually being evaluated.

Although it has not yet been directly researched if perfectionists experience more perceptions of failure than non-perfectionists, the negative emotional responses of perfectionists to performance evaluation and feedback suggest that they do. Most research has found that highly perfectionistic individuals experienced a depressed mood and dissatisfaction with their performance. Even when they performed well, they tended to feel they should have performed better. If the perfectionists did not perceive themselves as experiencing personal failure, they likely would not have reacted so negatively. Beiling et al. (2003) had 198 students complete the Frost Multidimensional Perfectionism scale, and questions assessing their standards, attributions, and behaviours at two points, one week before their midterm examination and one week after receiving their grades. Compared to the students low in perfectionism, individuals high in perfectionism set a higher standard for the exam, were more likely to fall short of their goals, and experienced more negative affect about the exam, whether they had met their goal or not.

Negative reactions to mistakes, as measured by the Concern over Mistakes subscale, is a central characteristic of perfectionism. Frost, Turcotte, Heimberg, Mattia, Holt, and Hope (1995) had students engage in either a relatively simple or a more challenging Stroop task. They found that compared with low-scoring participants, those who scored high on the Concern Over Mistakes perfectionism subscale, reacted to the challenging condition, in which more mistakes were made, with more negative mood, lower confidence, and a greater sense that they should have done better.

In related research, Frost and Henderson (1991) found that overall perfectionism, but especially the Concern Over Mistakes and the Doubt About Actions subscales were

related to a variety of negative reactions to mistakes among female athletes in competitions. These perfectionistic athletes were more dissatisfied with their performance and had more difficulty forgetting their mistakes than non-perfectionists. Their dissatisfaction and their inability to stop thinking about their mistakes suggests that they felt as though they had experienced a personal failure.

Flynn, Hewitt, Flett, and Weinberg (as cited in Flett & Hewitt, 2002) had a sample of 130 undergraduate students complete a "bogus test", which consisted of an arithmetic and an analogy task. Following the tasks, the participants completed tests measuring their reactions, coping, and their perceived stress. They found that people who scored high in self-oriented perfectionism, experienced a negative mood and were less satisfied with their performance than those who scored low on self-oriented perfectionism.

Some studies have examined the difference in reactions to feedback between adaptive and maladaptive perfectionism. Grzegorek et al. (2004), asked 273 undergraduate students to report their grade point average (GPA) and their satisfaction with their GPA. The participants also completed instruments measuring perfectionism, self-criticism, dependency, and self-esteem. They found that maladaptive perfectionists were more self-critical, and that although adaptive and maladaptive perfectionists did not differ in grade point average, maladaptive perfectionists were more dissatisfied with their grades than adaptive perfectionists.

Grzegorek (2003) gave an analogy test to undergraduate volunteers. The participants were then given contrived feedback on their performance. Half of them were told they performed better than 93% of students (positive feedback condition) and half were told that they performed better than 21% of students (negative feedback condition). The maladaptive perfectionists in the negative feedback condition exhibited greater

depression than those in the positive feedback condition. It appears evident that maladaptive perfectionists did not necessarily need negative feedback to experience feelings of failure since the maladaptive perfectionists who received positive feedback, were just as likely to say they should have done better as were both groups in the negative feedback condition.

Unlike previous research, Gosselin (2003) did not find that perfectionists experienced greater negative affect in response to negative feedback. The participants (239 undergraduate and graduate students) completed an instrument measuring perfectionism and then they completed a "bogus word task". They were randomly assigned to receive either negative or neutral feedback. Following the task they completed an instrument measuring their mood and self-efficacy. Interestingly, it was the individuals who were low in perfectionism that demonstrated the greatest decrease in self-efficacy and there were no differences in mood between those high in perfectionism and those low in perfectionism.

Since self-criticism and perfectionism are similar constructs, the research into self-criticism also provides evidence that perfectionists experience a higher number of perceptions of failure than non-perfectionists. Studies have demonstrated that people who were self-critical became depressed when they experienced failure (Hammen, Marks, & de Mayo, 1985; Zuroff & Mongrain, 1987).

Overall, the literature supports the view that perfectionists perceive their performance as failure since they tended to experience depressive affect and feelings of dissatisfaction and inadequacy when they received feedback or were in evaluation situations. The perfectionists would not have reacted this way, unless they felt they had experienced a personal failure. If perfectionists perceived failure in these studies, which

involved isolated instances of evaluation or feedback, it is likely that they would frequently experience feelings of failure and consequently, perceive themselves as failing more often than non-perfectionists. As of yet, this has not been directly tested.

Perfectionism and depression

Numerous studies have shown that perfectionism and depression are correlated among university aged individuals (Hayward & Arthur, 1998; Schweiter & Hamilton, 2002; and Sumi & Kanda, 2002) and among a psychiatric population (Hewitt, et al., 1996). Hayward and Arthur (1998) found a correlation between both self-oriented and socially-prescribed perfectionism and depression. This relationship existed among both males and females and across age groups. However, the researchers may not have found an interaction between perfectionism and age because there was a small range between the age groups (ages 17-19; ages 20-24; and age 25 and older), and in the 25 and older group, it is likely that there may have been relatively few adults significantly older than 25 years of age.

Schweiter & Hamilton (2002) demonstrated that the perfectionism-depression relationship exists in other countries. These researchers used the Frost Multidimensional Perfectionism Scale (Frost et al., 1990) and found perfectionism to be correlated with depression independent of gender and age. Using a uni-dimensional measure of perfectionism, Sumi and Kanda (2002), found the perfectionism-depression correlation exists among Japanese males. Unfortunately, their study was limited because the findings may not generalize to Japanese females or to other Asian cultures.

Certain aspects of perfectionism have been shown to be more correlated with depression than other dimensions. Although, Schweiter and Hamilton (2002) found that

the overall perfectionism score correlated with depression, the Concern Over Mistakes and Doubts about Actions subscales had the highest correlations with depression, meaning that people who reacted negatively to mistakes and had self-doubt, were more depressed than those who scored lower on those perfectionism dimensions. Rice, Slaney, and Ashby (1998) conducted a study among college students and found that the Concern over Mistakes, the Doubts about Action, the Parental Criticism, and the Parental Expectations subscales were correlated with depression, but the Organization and the Personal Standards subscales were not. In another study of college students, Shehniyilagh (2001) also found that the Concern over Mistakes, the Doubts about Action, the Parental Criticism, and the Parental Expectations subscales were correlated with depression. However, personal standards was not correlated with depression but had a low significant correlation with organization ($r = .11$).

Some researchers have investigated variables that mediate and moderate the relationship between perfectionism and depression. Learned resourcefulness, which is a coping skill, has been shown to mediate the relationship between socially-prescribed perfectionism and depression in male and female college students (Flett, Hewitt, Blankstein & O'Brien, 1991). The authors found that self-oriented perfectionism was not significantly associated with depression. The absence of a significant relationship may have been due to the fact that self-oriented perfectionism and depression were not considered within the context of the experience of failure or perhaps the absence of a significant relationship was due to the fact that the sample was comprised of non-clinical participants. Self-oriented perfectionism may play a role in severe depression but since there were not any severely depressed individuals in the sample, there was somewhat of a

restriction in the range of scores on the instrument measuring depression, which may have weakened the correlation between self-oriented perfectionism and depression.

Self-esteem has been found to mediate the relationship between self-oriented perfectionism and depression only in female university students (not male university students), and to mediate the relationship between socially-prescribed perfectionism and depression in both male and female university students (Preusser et al, 1994). The participants were mostly female undergraduate students. Therefore, the lack of support for this model with self-oriented perfectionist males may have occurred because there were relatively few males in the sample.

Rice et al. (1998) found that self-esteem moderated the relationship between maladaptive perfectionism and depression, instead of mediating the relationship. Therefore, the relationship between maladaptive perfectionism and depression was stronger for individuals who experienced feelings of low self-esteem. In addition, they found that adaptive perfectionism did not correlate with either self-esteem or depression, which suggests that adaptive perfectionism may not be that adaptive.

Negative attributional style has been demonstrated to moderate the relationship between perfectionism (self-oriented and socially-prescribed) and depression in both male and female university students (Chang & Sanna, 2001). The authors measured perfectionism and then measured depression and negative attributional style two months later so that perfectionism and depression would not be temporally contaminated with each other. This enabled them to show that perfectionism predicted the onset of depression two months later.

In recent years, the diathesis-stress theory of perfectionism and depression proneness has been explored. According to this model, perfectionists are posited to have

certain vulnerabilities which can be exacerbated by specific environmental stressors (Hewitt & Flett, 1993). Hewitt and Dyck's (1986) study found a positive association between life stress and depression in perfectionistic college students. Another study found that self-oriented perfectionism interacted with achievement hassles to predict depression, and that socially-prescribed perfectionism interacted with both achievement hassles and interpersonal hassles to predict depression (Hewitt & Flett, 1993).

Hewitt et al. (1996) conducted a similar study among current and former patients who were diagnosed with unipolar and bipolar depression. The researchers found that self-oriented perfectionism in combination with achievement stress predicted depression four months later, whereas, socially-prescribed perfectionism alone predicted depression. This study provides evidence that perfectionism dimensions may function as an important factor in unipolar depression over time. In contrast to the previously mentioned study, the results suggest that self-oriented perfectionism may be the perfectionism dimension that is the most important vulnerability factor in depression since self-oriented perfectionists were susceptible to depression when they experienced stress.

Perfectionism and Ethnicity

Despite the growing research on perfectionism, surprisingly few studies have examined potential ethnic differences in this construct. After conducting a review of the literature on stereotypes of Asian American students, Yee (1992) suggested that many Asian Americans could be characterized as possessing excessive perfectionistic behaviors. In a longitudinal study (Peng & Wright, 1994) comparing racial/ethnic groups, Asian American students reported that their parents had higher expectations for them than Caucasian students, which is one of the characteristics of perfectionism (Frost et al.,

1990). Sue and Okazaki (1990) offered cultural and social perspectives to explain achievement patterns in Asian students. They indicated that certain family values, such as demands and expectations for achievement and induction of guilt, may account for potential cultural differences in achievement. Asian American students, for example, may feel pressure to meet parental expectations for success as well as experience parental criticism if they do not meet those expectations, and consequently, this may lead many Asian American students to strive for perfection. This cultural difference suggests that there may be specific differences in the characteristics of perfectionism between Asian Americans and other racial/ethnic groups.

Although very little research has been conducted in this area, there is some literature that suggests Asian and Caucasian students differ in perfectionism. For example, two studies found that Asian American students reported higher scores on the Concern over Mistakes, Parental Expectations, Parental Criticism, and Doubts about Actions subscales (Castro & Rice, 2003; Chang, 1998). In contrast, Chow (2003) did not find differences in the levels of perfectionism between Asian American and European American students.

Summary of Literature

Depression is a psychological condition that includes affective, behavioural, cognitive, and physical symptoms. There are a variety of theories that provide explanations about the reasons people become depressed. These include biological, psychological, and social theories. Blatt (1974) and Beck (1983) have provided theories of certain personality traits that create a vulnerability to depression. Many studies support Blatt's theory that the trait of self-criticism creates a vulnerability to depression. Self-

criticism is closely related to perfectionism and therefore, perfectionism is also viewed as creating a vulnerability to depression. Research has repeatedly demonstrated that perfectionism is associated with depression (Blatt, 1995). Some researchers have found that the perfectionism-depression relationship is mediated and moderated by variables such as self-esteem (Preusser et al., 1994), stress (Hewitt & Flett, 1993), learned resourcefulness (Chang & Sanna, 2001), and attributional style (Derr, 2002). More research is necessary to examine what other variables are involved in this relationship. It has not yet been directly explored if perception of failure mediates the relationship between perfectionism and depression. Thus far, research only implies that this path to depression exists.

The cognitive style of perfectionists appears to lead them to feel as though they have failed. It seems logical that if perfectionists view performance in dichotomous terms of success and failure, and set unreachable goals, they would frequently perceive themselves as failing and consequently, would experience more personal failures than non-perfectionists. Feeling as though one has repeatedly failed would likely lead one to become depressed. The negative emotional responses of perfectionists to performance evaluation and feedback, suggest that perception of failure does mediate the relationship between perfectionism and depression. Most studies have shown that perfectionists experienced emotional distress when they did not have a perfect performance (Flett & Hewitt, 2002; Frost et al, 1995). Furthermore, they experienced symptoms of depression and dissatisfaction regardless of whether they met their goals (Beiling et al., 2003).

Additional support for this model comes from research into the relationship between failure and depression. Failure has been shown to be an antecedent of depression when certain cognitive conditions existed, such as low self-esteem (Abela, 2002),

negative attributional style (Metalsky, Joiner, Hardin, & Abramson, 1993), and self-criticism (Zuroff & Mongrain, 1987). These cognitive conditions have been found in perfectionists (Preusser, et al., 1994; Whittaker, 2003; Grzegorek, Slaney, Franze, & Rice, 2004 respectively). Therefore, this suggests that perfectionists may become depressed after they perceive themselves as experiencing a personal failure.

Relatively little research has been conducted into the differences in perfectionism among ethnic groups. A few studies have shown that Asian perfectionists scored higher than Caucasian perfectionists on some of the perfectionism subscales (Castro & Rice, 1998; Chang, 1998). Therefore, more research is required in this area.

Purpose and rationale of study

This study explored if perception of failure mediated the perfectionism-depression relationship, specifically if perfectionists experienced a higher number of perceptions of failure, and if perceptions of failure, in turn, led to depression. As this area had not previously been examined, this research helped to increase the understanding of perfectionism as well as the antecedents of depression. Testing this path model helped researchers and professionals to understand the implications perfectionism has on those who suffer from it, specifically, whether perfectionists tend to perceive themselves as experiencing failures more often than non-perfectionists. Furthermore, research in this area was important since people with depression live with enormous emotional pain. There exists high rates of depression among both the college population and the general Canadian population, which makes the costs of this condition considerable. With an increased understanding of its antecedents, professionals may be able to prevent and treat depression more effectively.

A path model is a hypothesized causal model about the relationships among variables that are correlated. It is based on theory and existing knowledge, and path analysis is applied to determine if the causal model is consistent with the empirical data (Ary, Jacobs, & Razavieh, 2002). In order to test the proposed path model, perfectionism and depression were measured at the beginning of the school semester (Time 1), and depression was again measured after the students had received their midterm examination grades (Time 2). Perception of failure was also assessed at Time 2. When the author tested this model, she statistically controlled for depression at Time 1. Thus, the variability in depression Time 2 scores, that was due to depression at Time 1, was statistically removed. Next, perfectionism and perception of failure were tested to see if they would significantly predict depression at Time 2. Controlling for depression at Time 1 provided support that something other than previous depression was affecting the students' mood after they received their test results.

Finally, this study examined whether perfectionism manifested itself differently in Caucasian and Asian students and whether the model proposed in this study functioned in a distinct way in these two ethnic groups. Currently, less than a handful of studies have explored the role ethnicity plays in perfectionism. Canada is a multicultural society and therefore, professionals need to be aware of how ethnicity influences psychological conditions. The following section lists the specific hypotheses of the present study.

Summary of hypotheses

It was hypothesized that:

1. There would be a positive association between perfectionism and depression at the Time 1 and Time 2, with a stronger correlation at Time 2.

2. Individuals high in perfectionism would experience a greater number of perceived failures than those who were low in perfectionism.
3. The more perceptions of failure the students experience, the more depressed they would become.
4. Perfectionism would predict depression after students had received their midterm grades (Time 2) after controlling for depression at the beginning of the school semester (Time 1).
5. The amount of perception of failure would predict depression at Time 2 after controlling for depression at Time 1.
6. Perception of failure would mediate the perfectionism-depression relationship.
7. The proposed model would function in the same way in the two ethnic groups.
8. Asian students would score higher than Caucasian students on four perfectionism subscales, Concern over Mistakes, Doubts about Action, Parental Expectations, and Parental Criticism. No other differences in the variables would be found between the two ethnic groups.

Method

Participants

One hundred and twenty-four first-year students were recruited through advertisements around the University of Alberta and there were ten students who did not return for the second half of the study. Participant ages ranged from 17 to 29 years, with a mean age of 18.1 years ($SD = 1.45$). There were 85 females and 29 males. The mean age for females was 18.12 ($SD = 1.64$) and for males 18.03 ($SD = .63$). The ethnic backgrounds of the participants were Caucasian (50%), Asian (39.5%), East Indian (2.6%), African Canadian (0.9%), Hispanic (0.9%), and 2.6% classified themselves as "other". The students reported what departments they were registered in and 54.4% were from the Faculty of Science, 26.3% were from the Faculty of Arts, 10.5% were from the Faculty of Engineering, 3.5% were from the Faculty of Agriculture and Forestry, and the remaining 5.48% were from the Faculty of Physical Education and Recreation, the Faculty of Nursing, the Faculty St. Jean, and the Faculty of Native Studies.

Measures

Depression. The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) is a self-report instrument used to measure depressive symptoms in individuals (Appendix D). The instrument contains 20 items and respondents indicate the frequency of those symptoms over the past week (from 0 = "rarely [less than 1 day] or none of the time" to 3 = "most or all of the time [5-7 days]"). The possible range of scores is zero to 60, with higher scores revealing more symptomatology. In constructing this test, the author identified the fundamental aspects of depressive symptomatology

from the clinical literature and factor analysis studies. These symptoms included depressed mood, feelings of shame and worthlessness; feelings of helplessness and hopelessness, psychomotor agitation, changes in appetite; and sleep disturbance. Radloff (1977) chose a few items representative of each symptom, in order to bolster content validity. The CES-D was moderately correlated ($r = .44$ to $.69$) with the Hamilton Depression Rating Scale (HDRS; Hamilton, 1960), suggesting reasonable concurrent validity. The CES-D has good internal reliability as measures of internal consistency were high in the general population (coefficient alpha = $.85$) and even higher in psychiatric population (coefficient alpha = $.90$; Radloff, 1977). The average test-retest correlation was $.57$ over two to eight week retest periods (Radloff, 1977).

Perfectionism. The Multidimensional Perfectionism Scale (FMPS; Frost et al., 1990) was used to measure perfectionism (Appendix E). The FMPS is a self-report instrument consisting of 35 items. Participants respond using a 5-point Likert scale ranging from 1 (agree strongly) through 5 (disagree strongly). The FMPS has six subscales: Concern Over Mistakes (9 items), Personal Standards (7 items), Parental Criticism (4 items), Parental Expectations (5 items), Doubts about Actions (4 items), and Organization (6 items).

This instrument has good concurrent validity as it significantly correlates with four other measures of perfectionism (Frost et al., 1990; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). The FMPS correlates with the Burns Perfectionism Scale ($r = .85$; Burns, 1980), the Irrational Beliefs Test ($r = .57$; Jones, 1968), and the Eating Disorder Inventory ($r = .59$; Garner, Olmstead, & Polivy, 1983). It was also found that the FMPS correlated with the dimensions of perfectionism on Hewitt and Flett's (1991) Multidimensional Perfectionism Scale (Frost et al., 1993). The FMPS was correlated with

self-oriented perfectionism ($r = .49$), with socially prescribed perfectionism ($r = .57$), and other-oriented perfectionism ($r = .28$). This measure has excellent internal consistency with alphas for the subscales ranging from .78 to .92, with the alpha for the total scale being .91 (Frost et al., 1990). The subscales have good test-retest reliabilities over one year, with reliabilities ranging from .60 to .72 (Cox & Enns, 2003). All subscales, except the Organization scale, are highly correlated with one another and with the total perfectionism score. Therefore, it has been recommended that the Organization scale not be used to compute the overall perfectionism score and the present study followed this guideline (Frost et al., 1990).

Grades and perceptions of failure. At the beginning of the school semester students completed a questionnaire about their grade expectations (Appendix F). This was done to gather additional information. On the questionnaire, they were asked to record each course they were enrolled in and then to report what score they expected to receive on each midterm examination. The students were provided with a list of expected score ranges and asked to circle the range that best matched their expectations. The ranges were 90%-100%, 85%-89%, 80%-84%, 75%-79%, 70%-74%, 65%-69%, 60%-64%, 50%-59%, and below 50%. An average expected grade was measured to have an estimate of how well the students expected to perform. This was calculated by taking the average of each grade range that a student expected their grades to fall within. For example, if a student circled that he expected he would receive a score between 90% and 100% on his first exam, a score between 75% and 79% on his second exam, a score between 80% and 84% on his third exam, and a score between 85% and 89% on his fourth exam, the researcher took the average of each range, which would be 95%, 77%, 82%, and 87%. Then, all

expected scores were averaged together. The average expected score in this example would be $(95 + 77 + 82 + 87 / 4) 85.25$.

After midterm examinations, the students completed a second questionnaire on their academic performance and their perception of failure (Appendix G). They were asked to record each course they were enrolled in and to report what score they received on each midterm examination. The students were provided with a list of score ranges and asked to circle the range each score fell within. The ranges were the same as with the grade expectations above. For each test result, the participants were also asked to report how they felt about their performance on that particular examination. The participants were given a list of possible reactions and they were asked to circle the response that best matched how they felt about their grade. The options ranged from very dissatisfied/personal failure to very satisfied/personal success.

From this questionnaire, both an average of their actual grades and their perception of failure were calculated. An average of their actual grades was measured for information purposes as the researcher wanted an estimate of the students' actual performance. This was calculated in the same manner as the averaged expected grades. The perception of failure was then measured by totalling the number of times the students reported being very dissatisfied or felt they experienced a personal failure. This was not a validated way of measuring perceptions of failure; however, Grzegorek et al. (2004) employed a similar method in her study. She asked students to report their cumulative university grade point average. The single question, "How satisfied are you with your GPA?" assessed the extent to which participants were satisfied with their GPA using a Likert-type scale ranging from 1 (very dissatisfied) to 5 (completely satisfied).

The method chosen by the author of the present study to measure perception of failure indicates how many times the students perceived themselves as experiencing a personal failure. However, due to the fact that this method of measuring perception of failure has not been validated, the author also employed other methods to measure this construct for confirmation purposes. It was hypothesized that if these other methods achieved similar results, it would suggest that perception of failure was accurately measured. However, the initial method was viewed as the most accurate.

One method employed was to assess the discrepancy between actual grades and expected grades, with larger discrepancies implying more perceptions of failure. Since the study explored the students' expected and actual grades for many examinations, an average discrepancy score was required. To calculate the discrepancy, the author first took the average of each expected grade range that a student circled. For example, if a student circled that he expected he would receive a score between 90% and 100% on his first test, a score between 75% and 79% on this second, a score between 80% and 84% on his third, and a score between 85% and 89% on his fourth, the researcher took the average of each range, which would be 95%, 77%, 82%, and 87%. Then, the researcher added all the expected scores. In this example, the total expected score would be $(95 + 77 + 82 + 87) = 341$. This process was completed for the actual grades. The total expected score was then subtracted from the total actual score, which provided the average grade discrepancy. Negative numbers indicate that the expected score was larger than the actual score, meaning they performed worse than they had anticipated. The lower the negative number was, the larger the discrepancy.

The fact that this provided an average grade discrepancy limited its usefulness as a clear picture of academic performance could not be obtained with an average discrepancy

score. For example, a lower than expected performance on one test, could have been masked by the student performing better than expected on another test. Thus, it may appear that there was not a grade discrepancy between expected and actual grades when in fact a discrepancy did exist. Therefore, the initial method was a more accurate measure of perception of failure.

In another attempt to measure perceptions of failure, the participants were asked how they felt about their performance overall, with a Likert scale ranging from very dissatisfied/personal failure to very satisfied/personal success. Higher scores indicate more feelings of failure. The disadvantage of this method was that it did not indicate the amount of perceptions of failure the students experienced, rather, it only measured the degree of dissatisfaction felt overall.

The final method used to measure perceptions of failure was to obtain an average of how satisfied/dissatisfied the students were with their performance. As previously mentioned, when the students were asked how they felt about the performance on a particular test, the response options ranged from 1 (very satisfied) to 5 (very dissatisfied). To arrive at an average satisfaction/dissatisfaction score, the response scores were added together and then divided by the number of test results a student received. For example, if a student reported that he was "very dissatisfied" with his performance on one test, he would receive a score of five. If he reported that he was "somewhat satisfied" with his performance on another test, he would receive a score of two. The scores of all his responses would be added together and then divided by the number of test results received. This method proved to also be limited as an average score may not represent what a student was feeling. For example, if a student was very satisfied with one test result but was very dissatisfied with another test result, her score would indicate that her

feelings were neutral about her performance, when in fact this may not actually be how she was feeling.

Anxiety. The Beck Anxiety Inventory (BAI; Beck, Brown, Epstein, & Steer, 1988) was used to measure anxiety in the participants (Appendix H). The BAI measures how "bothered" participants were by anxiety symptoms during the previous week. The instrument contains 21 descriptive statements (e.g., "Fear of the worst happening") which are rated on a four-point scale, ranging from 0 (not at all bothered) to 3 (severely bothered). Higher scores indicate more symptoms of anxiety. The BAI appears to have good content validity. The content of the BAI corresponds to the symptom criteria presented in the Diagnostic and Statistical Manual of Mental Disorders as guidelines for diagnosing patients with anxiety disorders (Beck et al., 1988). This instrument has good concurrent validity as it has significant correlations with other measures of anxiety (Beck et al., 1988), such as the Hamilton Anxiety Rating Scale – Revised ($r = .51$; Riskind, Beck, Brown, and Steer, 1987) and the Cognitive Check List ($r = .51$; Beck, Brown, Steer, Eidelson, & Riskind, 1987), which measures the frequency of dysfunctional cognitions related to anxiety. Furthermore, Fydrich, Dowdall, and Chambless (1990) found the BAI to significantly correlate with both Trait ($r = .58$) and State ($r = .47$) subscales of the State-Trait Anxiety Inventory Form Y (Spielberger, 1983). Beck et al., (1988), found that the BAI has high internal consistency (Cronbach coefficient $\alpha = .92$) and a good test-retest reliability over a one week period ($r = .75$).

Procedure

At the beginning of the semester, first-year students were recruited through announcements made in courses and through posters that were placed throughout the

campus. The students were offered ten dollars to participate. The study involved questionnaires to be completed on two occasions, one at the beginning of the school semester (Time 1) and one after the students obtained the results of their midterm examinations (Time 2). At Time 1, prior to the students' participation, the purpose of the study and the risks and benefits of the study were explained both orally and in writing. An information sheet was given to each person, which provided them with an overview of the study, the contact name and telephone number of the researcher, information where to obtain a summary of the results, and the contact information of the ethics committee (Appendix A). The information sheet also provided the students with the number and location of the University of Alberta Student Distress Centre in the event that some students may have been depressed and desired professional assistance. All participants were informed that their participation was voluntary and that all information would be kept strictly confidential and their anonymity would be protected. All potential participants were given the opportunity to ask questions before they signed a consent form (Appendix B).

The participants completed a demographic information form on their age, gender, ethnicity, and their program of study (Appendix C). They were then administered the FMPS, CES-D, and were asked to report what grades they expected to receive on each of their midterm examinations. At Time 2, approximately a week or two after examination week, when the students had their midterm examination results, the participants completed the CES-D and BAI. The students also reported their scores on their tests and their feelings about their performance (which was used to measure perceptions of failure). At Time 2, each participant received ten dollars for participating.

Results

The research design permitted the assessment of the relationships among the variables measured in the study and whether perfectionism varied with ethnicity. The analyses of these relations included correlations, analysis of variance (ANOVA), multivariate analysis of variance (MANOVA), and hierarchical multiple regression. The data was analysed for all students and separately for Caucasian and Asian students given that some research suggests there are differences between the two ethnicities on perfectionism (Castro & Rice, 2003; Chang, 1998).

Multiple regression analysis depended on several statistical assumptions which needed to be confirmed (Tabachnick & Fidell, 1996). The following assumptions were met: the ratio of cases to independent variables (which was easy to satisfy given the large sample size in this study); the issues of outliers, normality, linearity, and independence of residuals (which were all found to be conducive to regression based on graphical analyses); and finally, the issues of multicollinearity. The default function of the SPSS statistical program protected against inclusion of multicollinearity variables. The assumption of homoscedasticity was partially met, as there were slightly more errors in prediction with higher scores. However, this slightly weakened but did not invalidate the analysis (Tabachnick & Fidell, 1996).

Descriptive Analyses

The means and standard deviations for all the variables for the whole sample, as well as internal consistency values (Cronbach, 1951) are displayed in Table 1.

The means obtained for the entire sample were in keeping with the means obtained in a variety of previous samples. In a study of perfectionism, Enns et al. (2001)

Table 1

Reliabilities using the Total Sample

	Total Sample		
	M	SD	ALPHA
Perfectionism ^a	88.72	14.22	0.87
Concern Over Mistakes	25.28	6.28	0.86
Personal Standards	26.02	4.25	0.79
Parental Expectations	16.23	4.05	0.81
Parent Criticism	9.39	3.35	0.79
Doubts about Actions	11.85	3.13	0.70
Organization	23.27	4.08	0.89
Depression at the beginning of the semester ^b	17.13	10.05	0.90
Number of perceptions of failure	3.09	0.96	NA
Anxiety ^c	12.6	8.5	0.88
Depression after examinations ^b	19.68	10.3	0.90

Note.

^a Frost Multidimensional Perfectionism Scale

^b The Center for Epidemiologic Studies Depression Scale

^c Beck Anxiety Inventory

reported a mean of 21.1 on Concern over Mistakes, 9.6 on Doubts about Actions, 8.1 on the Parental Criticism, 14.2 on Parental Expectations, 25.8 on Personal Standards, and 22.5 on Organization.

The mean of 12.60 on the Beck Anxiety Inventory in the current study was similar to the means of 13.1 and 11.8 that Creamer, Foran, and Bell (1994) found in their study. Finally, means of 17.13 and 19.68 were obtained on the CES-D in the first and second measurement of depression, respectively. These scores were similar to the mean of 18.0 that Santor, Zuroff, Ramsay, Cervantes, and Palacios (1995) obtained in their study with college students.

Correlational Analyses

The association between the variables measured in this study were then examined. Pearson correlations were used to test hypotheses 1, 2, and 3. The results are shown in Table 2 for all students. These correlations were also examined by ethnicity (Tables 3 and 4). The correlations that emerged are discussed below.

Correlations for all students. The overall perfectionism score was significantly correlated with the following variables: depression at Time 1 ($r = .56, p < .01$), depression at Time 2 ($r = .39, p < .01$), and anxiety ($r = .29, p < .01$). Interestingly, the correlation between perfectionism and depression decreased after midterm examinations. It should also be pointed out that perfectionism did not significantly correlate with perception of failure, nor did perfectionism correlate with any of the other ways perception of failure was measured.

Although perception of failure did not correlate with perfectionism, perception of failure was correlated with depression at Time 2 ($r = .43, p < .01$). Expected and actual

Table 2

Correlations for All Students

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. FMPS ^a												
2. Concern ^b	0.82**											
3. Personal ^c	0.63**	0.48**										
4. Expect. ^d	0.59**	0.18	0.17									
5. Criticism ^e	0.64**	0.32**	0.02	0.68**								
6. Doubts ^f	0.61**	0.49**	0.30**	0.06	0.26**							
7. Organiz. ^g	0.07	0.10	0.21*	-0.03	-0.09	-0.02						
8. Failure ^h	0.09	0.12	-0.06	-0.02	0.08	0.20*	-0.03					
9. Gr.Exp ⁱ	0.14	0.08	0.34**	0.04	-0.07	0.02	-0.001	-0.06				
10. Grades ^j	0.23*	0.13	0.34**	0.13	0.01	0.13	-0.07	-0.59**	0.36**			
11. Anxiety ^k	0.29**	0.28**	0.15	0.03	0.21*	0.28**	-0.08	0.31**	-0.12	-0.06		
12. Dep. T1 ^l	0.56**	0.51**	0.19*	0.16	0.45**	0.57**	0.03	0.17	-0.09	0.11	0.46**	
13. Dep. T2 ^m	0.39**	0.37**	0.09	0.11	0.29**	0.44**	-0.08	0.43**	-0.09	-0.19*	0.68**	0.56**

Note.

^a Frost Multidimensional Perfectionism Scale (total score), FMPS^b Concern over mistakes (FMPS)^c Personal standards^d Parental expectations^e Parental criticism^f Doubts about action^g Organization^h Number of perceived failuresⁱ Expected grade average^j Actual grade average^k Beck Anxiety Inventory^l Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)^m Depression after examinations (The Center for Epidemiologic Studies Depression Scale)ⁿ $p < .05$. ** $p < .01$.

grades were measured for information purposes. Actual grades were associated with perfectionism ($r = .23, p < .05$), perceptions of failure ($r = -.59, p < .01$), and depression at Time 2 ($r = -.19, p < .05$). Expected grades were significantly associated with actual grades ($r = .36, p < .01$).

Correlations for Caucasian and Asian students. It was found that there were some differences between Caucasian and Asian students in the correlations between the perfectionism subscales. Only for Asian students was the Parental Expectations subscale associated with both the Concern over Mistakes subscale ($r = .30, p < .05$) and the Personal Standards subscale ($r = .34, p < .05$). There were also two major differences between the ethnic groups in the correlations of the subscales with the overall perfectionism score. For Caucasian students, the Doubts about Actions subscale had a correlation of .71 ($p < .01$) with the overall perfectionism score, which was considerably higher than the correlation of .49 ($p < .01$) for the Asian students. Another difference was that the Parental Expectations subscale had a correlation of .53 ($p < .01$) with the overall perfectionism score for Caucasian students, which was noticeably lower than the correlation of .72 ($p < .01$) for Asian students. The Parental Expectation subscale had the second highest correlation with the overall perfectionism score in Asian students, whereas, it had the fifth highest correlation in Caucasian students.

It was found that there were both similarities and differences between Caucasian and Asian students in the relationships between perfectionism and the other variables in the study. The total perfectionism score was not significantly related to perceptions of failure in either Caucasian or Asian students. The total perfectionism score correlated with depression at Time 1 for both Caucasian and Asian students ($r = .64, p < .01$; $r = .56,$

Table 3

Correlations for Caucasian Students

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. FMPS ^a												
2. Concern ^b	0.85**											
3. Personal ^c	0.69**	0.59**										
4. Expect ^d	0.53**	0.14	0.14									
5. Criticism ^e	0.64**	0.29*	0.14	0.66**								
6. Doubts ^f	0.71**	0.58**	0.40**	0.17	0.38*							
7. Organiz. ^g	0.16	0.15	0.25	0.02	0.02	0.05						
8. Failure ^h	0.04	0.07	-0.15	0.01	0.07	0.14	-0.11					
9. Gr.Exp ⁱ	0.02	0.09	0.21	-0.11	-0.17	-0.08	0.02	-0.05				
10. Grades ^j	0.26*	0.20	0.29*	0.03	0.07	0.32*	0.01	-0.52**	0.22			
11. Anxiety ^k	0.39**	0.32*	0.32*	0.13	0.24	0.33*	-0.03	0.28*	-0.15	0.09		
12. Dep. T1 ^l	0.64**	0.54**	0.31*	0.23	0.53**	0.62**	0.12	0.12	-0.06	0.32*	0.47**	
13. Dep. T2 ^m	0.48**	0.42**	0.27*	0.18	0.34**	0.42**	-0.02	0.31*	-0.03	0.02	0.68**	0.61**

Note.

^a Frost Multidimensional Perfectionism Scale (total score), FMPS^b Concern over mistakes (FMPS)^c Personal standards^d Parental expectations^e Parental criticism^f Doubts about action^g Organization^h Number of perceived failuresⁱ Expected grade average^j Actual grade average^k Beck Anxiety Inventory^l Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)^m Depression after examinations (The Center for Epidemiologic Studies Depression Scale)* $p < .05$. ** $p < .01$.

Table 4

Correlations for Asian Students

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. FMPS ^a												
2. Concern ^b	0.78**											
3. Personal ^c	0.64**	.35*										
4. Expect. ^d	0.72**	0.30*	0.34*									
5. Criticism ^e	0.68**	0.42**	0.05	0.68**								
6. Doubts ^f	0.49**	0.32*	0.25	0.07	0.21							
7. Organiz. ^g	-0.03	0.04	0.12	-0.07	-0.19	-0.09						
8. Failure ^h	-0.04	0.13	-0.16	-0.22	-0.01	0.10	0.07					
9. Gr.Exp ⁱ	0.21	-0.01	0.60**	0.21	-0.05	-0.10	-0.08	-0.30*				
10. Grades ^j	0.32*	0.10	0.54**	0.28	0.02	0.08	0.08	-0.60**	0.60**			
11. Anxiety ^k	0.19	0.29	-0.10	-0.04	0.29	0.18	-0.24	0.35*	-0.16	-0.21		
12. Dep. T1 ^l	0.56**	0.54**	0.17	0.24	0.46**	0.47**	-0.07	0.21	-0.20	-0.02	0.50**	
13. Dep. T2 ^m	0.21	0.26	-0.14	0.03	0.27	0.34*	-0.11	0.47**	-0.30*	-0.35*	0.72**	0.46**

Note.

^a Frost Multidimensional Perfectionism Scale (total score), FMPS^b Concern over mistakes (FMPS)^c Personal standards^d Parental expectations^e Parental criticism^f Doubts about action^g Organization^h Number of perceived failuresⁱ Expected grade average^j Actual grade average^k Beck Anxiety Inventory^l Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)^m Depression after examinations (The Center for Epidemiologic Studies Depression Scale)* $p < .05$. ** $p < .01$.

$p < .01$ respectively) and actual grades for both groups ($r = .26, p < .05$; $r = .32, p < .05$ respectively). However, the total perfectionism score, for Caucasian students, was also significantly correlated with anxiety ($r = .39, p < .01$) and depression at Time 2 ($r = .48, p < .01$) but was not for Asian students. For both ethnic groups, the relationship between perfectionism and depression weakened at Time 2; however, for Caucasian students, this relationship was still significant, but for the Asian students, the relationship was weakened sufficiently to no longer be significant. The overall perfectionism score was associated with actual grades in both Caucasian ($r = .26, p < .05$) and Asian students ($r = .32, p < .05$).

With one exception, the perfectionism subscales that were significantly correlated with depression at Time 1 in Caucasian students were also correlated with depression at Time 1 in Asian students. The only exception was that the Personal Standards subscale was associated with depression at Time 1 ($r = .31, p < .05$), but only for Caucasian students. In addition, this subscale was also associated with depression at Time 2 but again, only for Caucasian students ($r = .27, p < .05$).

Interestingly, the Personal Standards subscale was associated with actual grades for both Caucasian ($r = .29, p < .05$) and Asian students ($r = .54, p < .01$) but this relationship was stronger in the Asian group. The Doubts about Action scale was correlated with actual grades only among Caucasian students ($r = .32, p < .05$). Among Asian students, but not Caucasian students, there was a positive correlation between grade expectation and actual grades ($r = .60, p < .01$).

MANOVA of Scales by Ethnicity

A multivariate analysis of variance (MANOVA) using Hotelling's Trace statistic was performed to see if differences between Caucasian and Asian students existed on the questionnaires (hypothesis 8). The results were significant ($F(12,84) = 2.88, p < .01$).

Univariate results showed (Table 5) that there were statistically significant differences on the Parental Expectations scale ($F(1,96) = 16.28, p < .001$) and the Parent Criticism scale ($F(1,96) = 8.13, p < .01$). Asian students reported higher Parental Expectation ($M = 17.89, SD = 3.84$) than Caucasian students ($M = 14.79, SD = 3.81$). Asian students also reported that they experienced more parental criticism ($M = 10.44, SD = 3.33$) than the Caucasian students ($M = 8.67, SD = 3.22$).

Multiple Regression

In order to test the hypothesis that perception of failure mediated the perfectionism-depression relationship, hierarchical regression analyses were conducted. If this hypothesis was correct, perfectionism should have predicted depression at Time 2 (after controlling for depression at Time 1) but perfectionism should have decreased as a predictor when perception of failure was entered into the regression equation first. This path model hypothesis was not supported. For all students (Table 6) and for both ethnic groups (Table 7 and Table 8), perfectionism did not significantly predict depression at Time 2 when depression at Time 1 was controlled. However, perfectionism did significantly predict depression at Time 2 when depression at Time 1 was not controlled in all students (Table 9) and in Caucasian students (Table 10), but not in Asian students (Table 11). This finding suggests that depression at Time 1 mediated the perfectionist-depression at Time 2 relationship in Caucasian students. Furthermore, perception of

Table 5

Analyses of Variance and Mean Scores for Caucasian and Asian Students

	Caucasian		Asian		F-Value
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Concern Over Mistakes ^a	25.3	7.01	25.22	5.41	0.03
Personal Standards ^a	26.46	3.91	25.22	4.23	2.36
Parental Expectations ^a	14.79	3.81	17.89	3.84	16.28***
Parent Criticism ^a	8.67	3.22	10.44	3.33	8.13**
Doubts about Action ^a	12.05	3.23	11.76	2.75	0.41
Organization ^a	23.11	4.46	23.20	3.86	0.07
Depression at the beginning of the semester ^b	18.25	10.96	36.56	9.43	0.31
Number of perceived failures	2.95	0.96	3.22	0.95	2.67
Depression after exams ^b	19.49	10.71	20.64	9.99	0.30
Anxiety ^c	12.65	8.13	12.80	8.64	0.03
Expected grades	84.14	6.36	85.90	7.27	1.23
Actual grades	75.41	9.9	76.33	10.90	0.02

Note.

^aFrost Multidimensional Perfectionism Scale

^bThe Center for Epidemiologic Studies Depression Scale

^cBeck Anxiety Inventory

** $p < .01$. *** $p < .001$

failure did not mediate the perfectionism-depression relationship as there was not an association between perfectionism and perceptions of failure in any of the groups.

Part of the proposed model was supported as it was discovered that the number of perceptions of failure predicted depression at Time 2 when depression at Time 1 was controlled. For all students (Table 12), depression at Time 1 accounted for 32% of the variance ($F_{\text{change}}(1, 109) = 50.29, p < .001$) and perceived failures accounted for 12% of the variance ($F_{\text{change}}(1, 108) = 23.76, p < .001$). For Caucasians students (Table 13), depression at Time 1 accounted for 37% of the variance in depression at Time 2 scores ($F_{\text{change}}(1, 53) = 31.72, p < .001$) and perceived failure accounted for 8% of the variance ($F_{\text{change}}(1, 52) = 7.13, p < .01$). For the Asian Students (Table 14), depression accounted for 21% of the variance in depression at Time 2 scores ($F_{\text{change}}(1, 42) = 11.24, p < .01$) and perceived failure accounted for 14% of the variance in depression at Time 2 scores ($F_{\text{change}}(1, 41) = 9.10, p < .01$). According to the beta weights, perception of failure was the strongest predictor of depression at Time 2 in Asian students, whereas, depression at Time 1 (the beginning of the semester) was the strongest predictor of depression at Time 2 in Caucasian students.

Table 6

Hierarchical Regression Analysis of Perfectionism and Time 1 Depression on Time 2 Depression – All students

Predictors	R2 change	F change	Sig. Fchange	Std. B	t	Sig t
Block One Depression Time 1 ^a	.32	50.29	0.001***	.50	5.28	0.001***
Block Two Perfectionism ^b	.01	1.27	.26	.11	1.13	.26

Note.

^a Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)

^b Frost Multidimensional Perfectionism Scale

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

*** $p < .001$.

Table 7

Hierarchical Regression Analysis of Perfectionism and Time 1 Depression on Time 2 Depression – Caucasian students

Predictors	R2 change	F change	Sig. Fchange	Std. B	t	Sig t
Block One Depression Time 1 ^a	.37	31.72	0.001***	.52	3.71	0.001***
Block Two Perfectionism ^b	.01	1.18	.28	.15	1.01	.28

Note.

^a Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)

^b Frost Multidimensional Perfectionism Scale

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

*** $p < .001$.

Table 8

Hierarchical Regression Analysis of Perfectionism and Time 1 Depression on Time 2 Depression – Asian students

Predictors	R2 change	F change	Sig.Fchange	Std. B	t	Sig t
Block One Depression Time 1 ^a	.21	11.24	0.002**	.50	3.00	0.005**
Block Two Perfectionism ^b	.004	.20	.66	-.07	-.44	.66

Note.

^a Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)

^b Frost Multidimensional Perfectionism Scale

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

** $p < .01$.

Table 9

Hierarchical Regression Analysis of Perfectionism on Time 2 Depression – All Students

Predictors	R2 change	F change	Sig.Fchange	Std. B	t	Sig t
Block One Perfectionism ^a	.15	19.14	<.001***	.39	4.38	<.001***

Note.

^a Frost Multidimensional Perfectionism Scale

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

*** $p < .001$.

Table 10

Hierarchical Regression Analysis of Perfectionism on Time 2 Depression – Caucasian Students

Predictors	R2 change	F change	Sig. Fchange	Std. B	t	Sig t
Block One						
Perfectionism ^a	.23	15.49	<.001***	.48	3.94	<.001***

Note.

^a Frost Multidimensional Perfectionism Scale

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

*** $p < .001$.

Table 11

Hierarchical Regression Analysis of Perfectionism on Time 2 Depression – Asian Students

Predictors	R ² change	F change	Sig. F change	Std. B	t	Sig. t
Block One						
Perfectionism ^a	.04	1.92	.17	.21	1.39	.17

Note.

^a Frost Multidimensional Perfectionism Scale

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

Table 12

Hierarchical Regression Analysis of Perceived Failure and Time 1 Depression on Time 2 depression – All Students

Predictors	R2 change	F change	Sig.Fchange	Std. B	t	Sig t
Block One Depression Time 1 ^a	0.32	50.29	0.001***	0.51	7.03	0.001***
Block Two Number of Perceived Failures	0.12	23.76	0.001***	0.36	4.87	0.001***

Note.

^a Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

*** $p < .001$.

Table 13

Hierarchical Regression Analysis of Perceived Failure and Time 1 Depression on Time 2 depression – Caucasian Students

Predictors	R2 change	F change	Sig.Fchange	Std. B	t	Sig t
Block One Depression Time 1 ^a	0.37	31.72	0.001***	0.60	5.80	0.001***
Block Two Number of Perceived Failures	0.08	7.13	0.01**	0.28	2.67	0.01**

Note.

^a Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

** $p < .01$. *** $p < .001$.

Table 14

Hierarchical Regression Analysis of Perceived Failure and Time 1 Depression on Time 2 depression – Asian Students

Predictors	R2 change	F change	Sig.Fchange	Std. B	t	Sig t
Block One Depression Time 1 ^a	0.21	11.24	0.002**	0.38	2.96	0.005**
Block Two Number of Perceived Failures	0.14	9.10	0.004**	0.39	3.02	0.004**

Note.

^a Depression at the beginning of the semester (The Center for Epidemiologic Studies Depression Scale)

Std. B = Standardized Regression Coefficient

Sig t = All single predictor values reported as measured with all predictors in the model

** $p < .01$.

Discussion

To briefly summarize the results, it was found that the proposed path model was not supported. However, in this study, depression at Time 1 mediated the relationship between perfectionism and depression at Time 2, for Caucasian students. Furthermore, depression at Time 1 was the strongest predictor of depression at Time 2 in Caucasian students while perception of failure was the strongest predictor of depression at Time 2 in Asian students. The relationship between perfectionism and depression was stronger in Caucasian students and this relationship substantially weakened at Time 2 for both groups. For Asian students, this relationship weakened to the point that it was no longer significant. Finally, Asian students scored more highly on the Parental Expectation and the Parental Criticism perfectionism subscales than did Caucasian students. There were ethnic differences in the correlations between the perfectionism subscales as well as in the relationships between some variables in the study.

It was a surprising finding that perceptions of failure did not mediate the perfectionism-depression relationship. Contrary to the author's hypothesis and to any existing literature on the subject, perfectionism was not associated with the number of perceptions of failure. This finding is genuinely puzzling. A possible explanation for this finding is that the perfectionists worked extra hard to meet their goals and consequently, performed well academically. Therefore, they may not have viewed their test results as failures. However, there was not a perfect correlation between perfectionism and grades, which means that not all perfectionists were achieving high grades. Perhaps some perfectionists felt satisfied with their performance and some perceived failure, which resulted in a correlation not being found. These surprising results might be due to the fact that the sample was comprised of only first-year students. Research shows that many

first-year college students have difficulties adjusting to college (Feenstra, Banyard, Rines, & Hopkins, 2001). They may have been "homesick", had difficulties adjusting to the workload, or were distressed by not achieving the same grades they did in high school, and therefore, dissatisfaction with performance might have been spread throughout the sample. The adjustment difficulties of many students may have influenced their views of their performance, as people who are depressed view the world and themselves negatively (Beck, 1983). If this were the case, both perfectionist and non-perfectionist students might have been equally prone to view their performance as deficient.

The fact that perfectionism was not associated with the perceptions of failure supports Gosselin's (2003) study, which did not find a correlation between level of perfectionism and mood following negative feedback. However, the results were inconsistent with the majority of studies, which suggest that perfectionists feel like failures in evaluation and feedback situations. Studies have found that perfectionists were dissatisfied with their performance and experienced symptoms of depression in these situations (Frost & Henderson, 1991; Frost et al., 1995). Some studies have even showed that perfectionists reacted the same way regardless of whether they performed well, and that they reported they felt they should have done better (Beiling et al, 2003; Grzegorek, 2003).

Although perfectionism was not associated with perception of failure, it was significantly correlated with depression at Time 1 and at Time 2 in the results from the whole sample, which is consistent with previous literature (Hayward & Arthur, 1998; Schweiter & Hamilton, 1998; Sumi & Kanda, 2002). However, contrary to the researcher's hypothesis, the relationship between perfectionism and depression was stronger in Caucasian students. This relationship weakened at Time 2 in both ethnic

groups. Oddly, the perfectionism-depression relationship was still significant in Caucasian students at Time 2 but was no longer significant in Asian students. These ethnic differences are inconsistent with previous research. One study found that perfectionism and depression were correlated in both Asian and Caucasian populations but the relationship was stronger among the Asian individuals (Castro & Rice, 2003). Chow (2003), however, did not find any differences. An explanation for the weakening of the perfectionism-depression relationship is that perfectionists, on the whole, achieved high grades, and therefore, were somewhat less depressed because they tended to perform well. The difference between the two groups could be due to the Asian perfectionists performing somewhat better than the Caucasian perfectionists.

It was also found that depression at Time 1 mediated the relationship between perfectionism and depression at Time 2 in Caucasian students. Therefore, the results suggest that perfectionism resulted in depression at Time 1, which further led to depression at Time 2. This indicates that a different pathway to depression existed for Caucasian students. It was likely that those who were depressed at the beginning of the semester would also be depressed later in the semester as a typical untreated depressive episode lasts four months (American Psychiatric Association, 2000). Therefore, the perfectionists that were depressed at the beginning of the semester would also likely have been depressed after they received their midterm test results. The reason this model did not apply to Asian students was that perfectionism and depression at Time 2 were not correlated in Asian students, and therefore, there would not be a model linking perfectionism and depression at Time 2. As previously mentioned, the reason perfectionism and Time 2 depression were associated in Caucasian individuals, and not in

Asian individuals, could be due to Asian perfectionists achieving higher grades than Caucasian students, which positively affected their mood.

It was hypothesized that perception of failure would predict depression at Time 2, when depression at Time 1 was controlled. This was supported. Therefore, the more perceptions of failure that were experienced, the more depressed the participants became. Many studies have found that students become depressed after experiencing a failure when other cognitive conditions exist, such as low self-esteem (Abela, 2002), negative attributional style (Metalsky, Joiner, Hardin, & Abramson, 1993), and self-criticism (Zuroff & Mongrain, 1987), all of which have been found to exist in perfectionistic individuals (Preusser, et al., 1994; Whittaker, 2003; Grzegorek, Slaney, Franze, & Rice, 2004 respectively). The present study found the relationship between perception of failure and depression to still exist even though perception of failure was not associated with perfectionism. This indicates that there were a group of students, who were not perfectionists, who perceived themselves as experiencing academic failures. This means that in this sample there were two distinct pathways to Time 2 depression: one that went from perfectionism to depression at Time 1, and then to depression at Time 2, and a second path that went directly from perception of failure to depression at Time 2.

Surprisingly, the two ethnic groups varied on which variables were the strongest predictors of depression. It was found that depression at Time 1 was the strongest predictor of depression at Time 2 for Caucasian students, whereas, perception of failure was the strongest predictor of depression at Time 2 for Asian students. Furthermore, perceived failure explained almost twice as much variance in the depression (Time 2) in Asian students than in Caucasian students. This finding suggests that the Asian students were more emotionally reactive to their academic performance. This may be due to the

greater emphasis placed on achievement in their culture (Liu, 1998). Depression was also more constant in Caucasian students as there were higher correlations between depression at Time 1 and depression at Time 2 in Caucasian students.

The results suggest that perfectionism manifested itself differently in the two ethnic groups. It appears that parental demands played a larger role in the perfectionism trait in Asian students than in Caucasian students. The Parental Expectation subscale was associated with both the Concern over Mistakes and the Personal Standards subscales but only for Asian students. This means that the higher parents' expectations, the higher the Asian students' standards were and the more negatively they reacted to failure. In addition, the Parental Expectations subscale had a substantially higher correlation with the overall perfectionism score in the Asian students than it did in the Caucasian students. This subscale had the second highest correlation with the overall perfectionism score for Asian students, whereas, it had only the fifth highest correlation with the overall perfectionism score for Caucasian students. Therefore, most Asian perfectionists had parents who had high expectations for their children. Self-doubt appears to have been a more important factor in perfectionism for Caucasian students as the Doubts about Action subscale had a noticeably larger correlation with the overall perfectionism score in Caucasian students than in Asian students.

It was predicted that Asian students would score higher than Caucasian students on the Concern over Mistakes, the Doubts about Actions, the Parental Expectations, and the Parental Criticism subscales. It was found, however, that Asian students only scored higher than the Caucasian students on the Parental Expectations and the Parental Criticism subscales. Therefore, Asian perfectionists perceived their parents as having higher standards and of being more critical than did Caucasian students. This again

indicates the influence of parents in the perfectionism construct in Asian students. Chang's (1998) and Casto and Rice's (2003) studies also found differences between Asian and Caucasian students on these subscales; however, their studies found differences between the two groups in the Doubts about Action and the Concern over Mistakes subscales as well. The findings of the present study are consistent with Sue and Okazaki's (1990) conceptual view that suggests that parents of Asian students tend to place great demands on their children and induce guilt about the importance of meeting those expectations. However, the findings are inconsistent with Chow's (2003) results, as she did not find differences in the levels of perfectionism between Asian American and European American students.

Ethnicity also affected other relationships between the variables measured in the study. For Asian individuals, but not Caucasian individuals, expected grades were associated with actual grades. Therefore, Asian students were more accurate in estimating their abilities than Caucasian students. Interestingly, Caucasian individuals who were high in self-doubt achieved high grades. This relationship was not present in Asian students, suggesting that the ethnic groups react differently when they have self-doubt. Caucasian students may have been spurred on to work harder because they lacked confidence in their abilities to perform well, and due to their increased effort, they achieved higher grades than the Asian students who were also high in self-doubt.

Perfectionism appears to have been more adaptive in Asian students than in Caucasian students since perfectionism in the Asian sample was not associated with as many psychological problems. For example, as previously mentioned, perfectionism and depression at Time 2 were not associated in Asian students. In addition, perfectionism and anxiety were only correlated in Caucasian students. The presence of this relationship

is consistent with previous literature (Flett, Hewitt, & Dyck, 1989). The difference between the two groups could have been due to the Asian perfectionists performing somewhat better academically than the Caucasian perfectionists, and therefore, the Asians perfectionists were not anxious.

In previous literature, the Personal Standards subscale has been found to be adaptive, since it has been found to be either not be associated with depression or to be negatively associated with depression (Rice, Slaney, & Ashby, 1998; Kawamura, Hunt, Frost, & DiBartolo, 2001 respectively). However, in this study, it was only adaptive for Asian students. The Caucasian individuals who had high personal standards were depressed on both occasions, whereas, this relationship did not exist in Asian students. Moreover, those who scored more highly on the Personal Standards perfectionism subscale achieved higher grades, but this relationship was stronger in Asian students than in Caucasian students. This means that the Asian students, with high standards, achieved higher grades more consistently than the Caucasian students. Therefore, since high standards were not associated with depression, and were related to grades more strongly in Asian students than in Caucasian students, perfectionism was more adaptive in Asian individuals.

In summary, perfectionism manifested itself differently between the two ethnic groups. Compared to Caucasian students, perfectionism in Asian students seems to have been more influenced by parents, specifically by parents' expectations and criticism. It appears that perfectionism was more adaptive in Asian individuals than in Caucasian students since perfectionism tended not to be correlated with Time 2 depression and anxiety. The fact that it was associated with Time 1 depression but not Time 2 depression indicates that depression was less consistent in Asian perfectionists. Furthermore, the

Asian students with lofty standards, achieved high grades more consistently than the Caucasian students. Therefore, the results indicate that perfectionism motivated and stimulated Asian students to achieve their goals, and once their midterm evaluations were over, they relaxed and experienced an improved mood.

Self-doubt appears to have been more involved in perfectionism in Caucasian students as it had a substantially higher correlation to the overall perfectionism score than it did in Asian students. This self-doubt seems to have helped them achieve high grades. Furthermore, the results indicate perfectionism in Caucasian individuals was more maladaptive than in Asian students. Perfectionism was associated with depression on both occasions (Time 1 and Time 2) and with anxiety. Those individuals with high standards did not achieve high grades as consistently as the Asian students did. Thus, although perfectionism appears to have helped some Caucasian students achieve high grades, the perfectionists remained depressed and anxious after they received their test results.

Limitations

It is important to mention the limitations of this study. First, the study did not control for the number of generations that the Asian students' family had resided in Canada. It is possible that the values of the students may differ depending on the length of time their families have resided in Canada. Thus, the variables and the relationship among the variables may depend on the number of generations since the initial immigration to Canada. Second, the study only examined differences between Asian and Caucasian students. Future studies should include other ethnic groups as well.

Third, the sample was composed of first-year university students who volunteered for the study. It is possible that the sample was not representative of the university

population because random sampling was not used. In addition, the students were largely from the Faculty of Arts and the Faculty of Science. The results may not generalize to non-students, students in other programs, or students in other years of university study. Furthermore, first year students may have had adjustment difficulties to university that affected the results that were obtained. Students may have been "homesick" from moving away from home for the first time, or had difficulties adjusting to the workload. Some students may have been upset that they were not achieving the same grades they did in high school. Perhaps perfectionism and perceived failure would have been correlated but the effect was masked by the adjustment difficulties of the students. This study should be replicated with second, third, and fourth year university students and with students in other programs. Non-academic perceived failures should also be assessed in non-students.

Fourth, the number of perceived failures were measured by totalling the number of times students perceived themselves as failing. There are some problems with this method. One concern is that it did not control for the number of examination results the students received. Therefore, those who had more classes would likely have had more perceived failures. Overall, however, the majority of the students received four test results. A second weakness was that it did not differentiate if the perceived failures were actual failures. Therefore, it was not explored whether the feeling of failure, but not actual failure, correlated with perfectionism and depression. Measuring perception of failure with this method still provided useful information. According to the author's hypothesis perfectionism should have still been associated with perceptions of failure, regardless of whether it was an actual failure or not since perfectionists classify their performance in the dichotomous terms of success and failure. Finally, this was not a standardized method to measure perceptions of failure; therefore, the way it was assessed may not be valid or

reliable. The exploration into perceptions of failure would be enhanced if future research were conducted to create a reliable and valid instrument to measure it.

Finally, there were not enough male participants in the study to do any gender comparisons. This was a limitation as there may be differences in the variables and the relationships among the variables between the genders of the different ethnic groups. Related to this, the study also did not explore if perfectionism differs among the different university programs. A recent study showed that such differences may exist. Enns et al. (2001) found that perfectionism in medical students differed systematically from perfectionism in general arts students.

Future Directions

Despite the limitations outlined above, the data did enhance the understanding of perfectionism and depression. To continue to expand this knowledge, future studies should examine if the proposed path model would be supported with research that involved participants in their second, third, or fourth year of university. It would also be interesting to explore if the model varied depending on gender or the program being studied. Future studies should also examine if the model is supported when people feel they experience a personal failure when in actuality they did not fail. Furthermore, perceptions of failure may mediate the perfectionism-depression relationship when non-academic failures are assessed. This should be studied as well.

Future research should examine if perfectionism manifests itself differently in students enrolled in various university programs or if it manifests itself differently in men and women. It would also be beneficial to include more ethnic groups and to assess if perfectionism varies depending on the number of generations since the initial immigration

to Canada. Finally, this study was the first to report ethnic differences in the correlations between the perfectionism subscales and additional research is definitely needed in this area.

Conclusion

The present study tested a path model linking perfectionism, perception of failure, and depression. It was also examined whether the path model functioned in a distinct way in Caucasian and Asian students and whether perfectionism manifested itself differently in Caucasian and Asian students. One hundred and fourteen university students completed questionnaires on two occasions. At the beginning of the school semester (Time 1) they completed questionnaires measuring perfectionism and depression, and they were asked to report what grades they expected to achieve on their midterm examinations. After they received their midterm grades (Time 2), they completed questionnaires measuring depression and anxiety, and were asked to report their actual grades and how they felt about their performance. In this sample perception of failure did not mediate the perfectionism-depression relationship. No correlation was found between perfectionism and perceptions of failure. Two distinct pathways to depression at Time 2 were found. One path went from perfectionism to Time 1 depression to Time 2 depression (only in Caucasian students). The second path went from perception of failure to depression. The relationship between perfectionism and depression weakened over the school semester for both ethnic groups, and was no longer significant for Asian students at Time 2. Depression at Time 1 was the strongest predictor of depression at Time 2 in Caucasian students; however, the perception of failure was the strongest predictor of depression at Time 2 in Asian students. Overall, in Asian students, it appeared that

perfectionism was more adaptive, and that parents' expectations and criticisms played a greater role in perfectionism for Asian students than Caucasian students.

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Appendices

Appendix A *Information Sheet*

Appendix B
Consent Form

Appendix C
Demographic Sheet

1. Age: _____
2. Gender: Male or Female
3. What faculty are you registered in? _____
4. What department are you registered in? _____
5. What is your ethnicity:
 - a) African Canadian
 - b) Caucasian
 - c) Asian
 - d) Hispanic
 - e) First Nations

Appendix D
Sample Items from the Center for Epidemiologic Studies Depression Scale (CES-D)

1. I did not feel like eating; my appetite was poor.

- 1) Rarely or none of the time (less than 1 day)
- 2) Some or a little of the time (1-2 days)
- 3) Occasionally or a moderate amount of time (3-4 days)
- 4) Most or all of the time (5-7 days)

2. My sleep was restless.

- 1) Rarely or none of the time (less than 1 day)
- 2) Some or a little of the time (1-2 days)
- 3) Occasionally or a moderate amount of time (3-4 days)
- 4) Most or all of the time (5-7 days)

3. I could not get "going."

- 1) Rarely or none of the time (less than 1 day)
- 2) Some or a little of the time (1-2 days)
- 3) Occasionally or a moderate amount of time (3-4 days)
- 4) Most or all of the time (5-7 days)

Appendix E
Sample Items from the Multidimensional Perfectionism Scale (FMPS)

1. If I do not set the highest standards for myself, I am likely to end up a second-rate person.

Strongly Disagree Disagree Neutral Agree Strongly Agree

2. It is important to me that I be thoroughly competent in everything I do.

Strongly Disagree Disagree Neutral Agree Strongly Agree

3. If I fail at work/school, I am a failure as a person.

Strongly Disagree Disagree Neutral Agree Strongly Agree

4. I should be upset if I make a mistake.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Appendix F
Sample of Grade Expectation Items

1. a) Enter the name or number of one course you are taking this semester: _____

b) Please circle the range you expect to score on the midterm exam.

90-100%

75-79%

60-64%

85-89%

70-74%

50-59%

80-84%

65-69%

Below 50%

2. a) Enter the name or number of another course you are taking this semester: _____

b) Please circle the range you expect to score on the midterm exam.

90-100%

75-79%

60-64%

85-89%

70-74%

50-59%

80-84%

65-69%

Below 50%

Appendix G
Sample of Actual Grades and Perceptions of Failure Items

1. A) Enter the name or course number of one class you are taking this semester: _____

B) Please circle the range you scored on the midterm exam in this course (if more than one midterm exam was given in this course, please circle the most recent exam score.)

90-100%

75-79%

60-64%

85-89%

70-74%

50-59%

80-84%

65-69%

Below 50%

C) Please circle the response that best describes how you feel about your performance on this midterm exam.

(a) Very dissatisfied – personal failure

(b) Somewhat dissatisfied

(c) Neutral

(d) Satisfied

(e) Very pleased – personal success

2. A) Enter the name or course number of another class you are taking this semester: _____

B) Please circle the range you scored on the midterm exam in this course (if more than one midterm exam was given in this course, please circle the most recent exam score.)

90-100%

75-79%

60-64%

85-89%

70-74%

50-59%

80-84%

65-69%

Below 50%

C) Please circle the response that best describes how you feel about your performance on this midterm exam.

- (a) Very dissatisfied – personal failure
- (b) Somewhat dissatisfied
- (c) Neutral
- (d) Satisfied
- (e) Very pleased – personal success

Appendix H
Sample Items from the Beck Anxiety Inventory

Directions: Indicate how much you have been bothered by each symptom during the past week.

1. Unable to relax

Not At All
(0 days)

Mildly
(1-2 days)

Moderately
(3-4 days)

Severely
(Everyday)

2. Fear of the worst happening

Not At All
(0 days)

Mildly
(1-2 days)

Moderately
(3-4 days)

Severely
(Everyday)

3. Face flushed

Not At All
(0 days)

Mildly
(1-2 days)

Moderately
(3-4 days)

Severely
(Everyday)